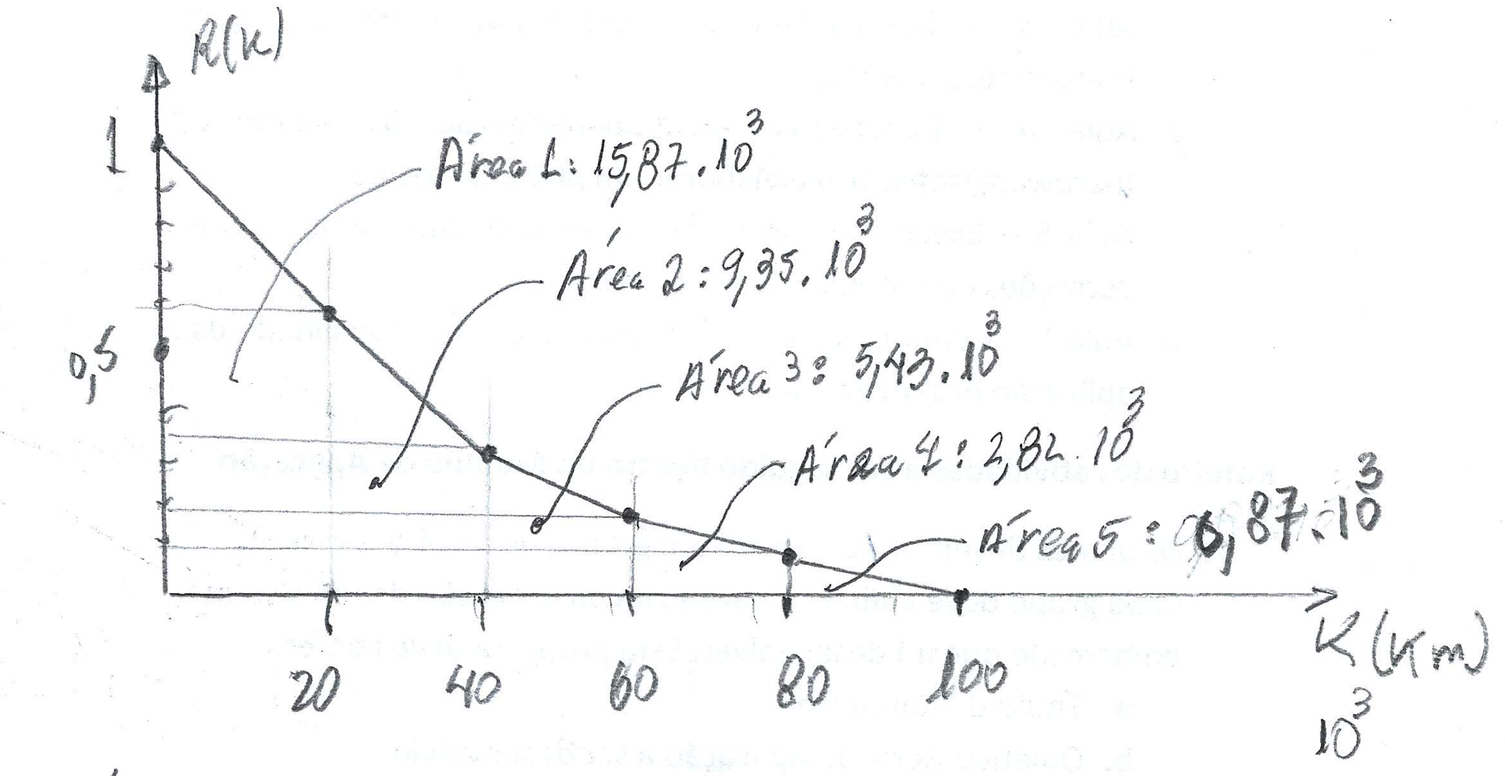
Ex 12

$$MKTF = \int_0^{\infty} R(K)\,dK \qquad R(K) = \frac{No(K)}{No} \qquad No = 46$$

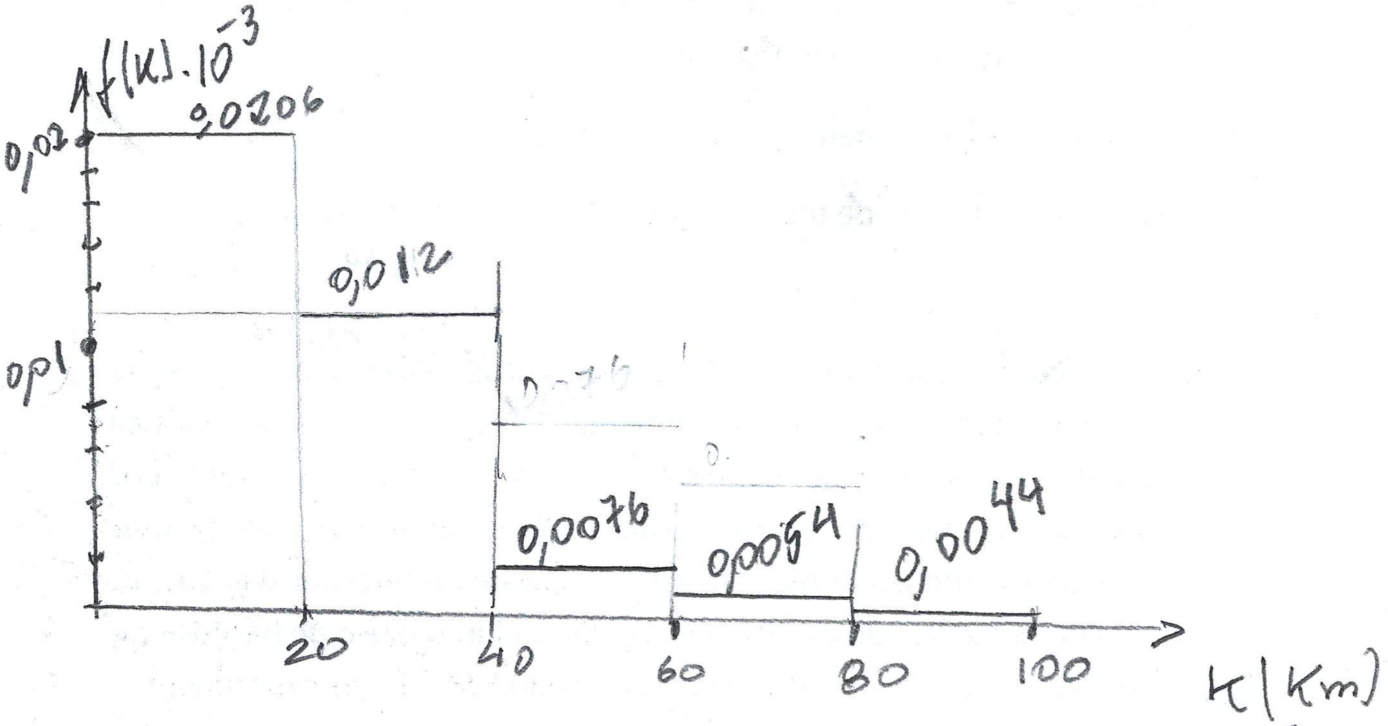
K	No(K)	$R(K) = \frac{No(K)}{No}$	$f(K) \cdot (10^{-3})$
0	46	1	0,0206
20.000	27	0,587	0,012
40.000	16	0,348	0,0076
60.000	9	0,195	0,0054
80.000	4	0,087	0,0044
100.000	0	0	



Área debaixo da Curva é o MKTF

MKTF = 34 340 Km

$$MKTF = \int_0^\infty f(K) \cdot K \cdot dK \quad \text{sendo} \quad f(K) = -\frac{dB(K)}{dK}$$



$$MKTF = \int_0^{20.000} 0{,}0206 \cdot K\,dK + \int_{20000}^{40.000} 0{,}012 \cdot K\,dK + \int_{40.000}^{60000} 0{,}0076\,K\,dK$$

$$+ \int_{60000}^{80000} 0{,}0054 \cdot K\,dK + \int_{80000}^{100000} 0{,}0044 \cdot K\,dK$$

$$MKTF = 0{,}0206 \cdot \frac{K^2}{2}\Bigg|_0^{20.000} + 0{,}012 \cdot \frac{K^2}{2}\Bigg|_{20000}^{40000} + 0{,}0076\,\frac{K^2}{2}\Bigg|_{40000}^{60.000}$$

$$+ 0{,}0054\,\frac{K^2}{2}\Bigg|_{60000}^{80000} + 0{,}0044\,\frac{K^2}{2}\Bigg|_{80000}^{100.000}$$

$$MKTF = 4{,}12 \cdot 10^3 + 7{,}2 \cdot 10^3 + 7{,}6 \cdot 10^3 +$$

$$+ 7{,}56 \cdot 10^3 + 7{,}92 \cdot 10^3$$

$$\underline{MKTF \cong 34400\ \text{Km}}$$

Ex 13

$$f(t) = t \cdot e^{-t^2/2}$$

função densidade de probabilidade de falha

$$\int_0^{\infty} f(t)\,dt \stackrel{\Delta}{=} 1$$

$$\int_0^{\infty} f(t)\,dt = \int_0^{\infty} t \cdot e^{-t^2/2}\,dt = -e^{-\frac{t^2}{2}}\Big|_0^{\infty}$$

$$= -(0-1) = 1$$

$R(t)$ e $\lambda(t)$ $\quad f(t) = -\frac{dR(t)}{dt} \quad dR(t) = -f(t)\,dt$

$$\int_0^{R(t)} dR(t) = -\int_0^{t} f(t)\,dt \qquad R(t) - R(0) = -\int_0^{t} t \cdot e^{-\frac{t^2}{2}}\,dt$$

$$R(t) - 1 = -\left(-e^{-t^2/2}\right)_0^{t} = e^{-\frac{t^2}{2}} - 1$$

$$\Rightarrow \underline{R(t) = e^{-\frac{t^2}{2}}}$$

$$\lambda(t) = \frac{-\frac{dR(t)}{dt}}{R(t)} = \frac{-\left(-t \cdot e^{-t^2/2}\right)}{e^{-t^2/2}} \Rightarrow \underline{\underline{\lambda(t) = t}}$$

$N_0 = 50 \quad N_F(1-2h) = ?$

$$N_0(t) = R(t) \cdot N_0 \Rightarrow \begin{cases} N_0(1h) = e^{-1/2} \cdot 50 = 30{,}32 \\ N_0(2h) = e^{-2} \cdot 50 = 6{,}77 \end{cases}$$

$$N_F(1-2h) = 30{,}32 - 6{,}67 = 23{,}65 \Rightarrow \boxed{N_F(1-2h) \cong 24}$$